

Control Number 10/712,949 (filed 11/13/2003)

Art Unit: 1764

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the Application:

Listing of the Claims

5 Pending Claims

1 - 20 (canceled)

21. (currently amended): A process for the production of refinery transportation fuel or blending components for refinery transportation fuel, which process comprises:

10 ~~providing an organic feedstock consisting essentially of material boiling between about 75° C. and about 425° C. comprising a mixture of sulfur-containing, nitrogen-containing and other organic compounds derived from natural petroleum by processes that include~~

15 reacting a petroleum distillate consisting essentially of material boiling between about 50° C. and about 425° C. comprising a mixture of sulfur-containing, nitrogen-containing and other organic compounds derived from natural petroleum with a source of hydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst to assist by hydrogenation removal of sulfur and/or nitrogen from the petroleum hydrotreated distillate;

20 partitioning by distillation the ~~organic feedstock~~ hydrotreated distillate to provide at least one low-boiling organic part consisting of a sulfur-lean, mono-aromatic-rich fraction collected below a temperature in the range from 260° C. to 300° C. having a sulfur level of no more than 25 ppm, and a high-boiling organic part consisting of a sulfur-rich, mono-aromatic-lean fraction;

25 contacting a gaseous source of dioxygen with at least a portion of the low-boiling organic part in a liquid reaction medium containing a particulate, heterogeneous oxygenation catalyst system which exhibits a capability to enhance the incorporation of oxygen into a mixture of liquid organic compounds and comprises one or more catalyst metal selected from the group consisting of chromium,

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molybdenum, bismuth, manganese, iron, and platinum, while maintaining the reaction medium substantially free of halogen and/or halogen-containing compounds, to form a liquid mixture comprising hydrocarbons, oxygenated organic compounds, water of reaction, and acidic co-products, such that the oxygenation of the hydrocarbon portion of the liquid mixture is more than 1 percent by weight ;

- 5 separating from the mixture at least a first organic liquid of low density comprising hydrocarbons, oxygenated sulfur-containing, oxygenated nitrogen-containing and other oxygenated organic compounds and acidic co-products and at least portions of the catalyst metal, water of reaction and acidic co-products, and a second separated liquid which is an aqueous solution containing at least a portion of the oxidized sulfur-containing and/or nitrogen-containing organic compounds; and
- 10 recovering a low-boiling oxygenated product having a low content of nitrogen, acidic co-products and a sulfur content of no more than 15 ppm .

22. (previously presented): The process according to claim 21 wherein the hydrogenation catalyst comprises at least one active metal, selected from the group consisting of the *d*-transition elements in the Periodic Table, each incorporated onto an inert support in an amount of from about 0.1 percent to about 20 percent by weight of the total catalyst.
- 15

23. (previously presented): The process according to claim 21 which further comprises recovering at least a portion of the heterogeneous oxygenation catalyst system and injecting all or a portion of the recovered catalyst system into the liquid reaction medium.
- 20

24. (previously presented): The process according to claim 21 wherein the oxidizing agent comprises a gaseous source of dioxygen, the active catalyst metal of the oxygenation catalyst system is employed as metal oxide, mixed metal oxide, and/or basic salts of the metal or mixed metal oxide.
- 25

- 25 (previously presented): The process according to claim 21 wherein the heterogeneous oxygenation catalyst system comprises an oxygenation catalyst containing from about 1 percent to about 30 percent chromium as oxide and from about 0.1 percent to about 5 percent platinum on a support comprising gamma alumina.
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26. (previously presented): The process according to claim 21 wherein the heterogeneous oxygenation catalyst system comprises chromium molybdate or bismuth molybdate and optionally magnesium.

27. (previously presented): The process according to claim 21 wherein the heterogeneous oxygenation catalyst system comprises gamma alumina and a catalyst represented by the formula $\text{Na}_2\text{Cr}_2\text{O}_7$ in an amount of from about 0.1 percent to about 1.5 percent of the total catalyst system.

28. (previously presented): The process according to claim 21 further comprising blending at least a portion of the low-boiling oxygenated product with at least a portion of the high-boiling product to obtain components that exhibit sulfur levels of less than about 15 ppm, for refinery blending of ultra-low sulfur transportation fuel.

29 - 30 (canceled)